

11747.105002 NUS - Sequence Listing.ST25.txt  
SEQUENCE LISTING

<110> National University of Singapore  
Chua, Kaw Yan  
Liew, Lip Nyin

<120> Recombinant Nucleic Acid Useful for Inducing Protective Immune Response Against Allergens

<130> 11747.105002 NUS002

<140> 10/526,120

<141> 2005-02-28

<150> PCT/SG03/00205

<151> 2003-08-29

<160> 52

<170> PatentIn version 3.3

<210> 1

<211> 216

<212> DNA

<213> Artificial

<220>

<223> synthetic oligonucleotide encoding for the leader sequence, the transmembrane and cytoplasmic tail of Mus musculus LAMP-1, containing Nhe I site 3' of the LAMP-1 leader sequence and Nde I site 5' of the LAMP-1 transmembrane and cytop

<400> 1

ctcgagccac catggccgcc cccggcgccc ggaggcccct gtcctgctg ctgctggcag	60
gccttgacaca tggcgctagc gaattcccgg ggatccatat gttgatcccc attgctgtgg	120
gcggtgccct ggcagggctg gtcctcatcg tcctcatcgc ctacctcatt ggcaggaaga	180
ggagtcacgc cggctatcag accatctagc ggccgc	216

<210> 2

<211> 234

<212> DNA

<213> Artificial

<220>

<223> chimeric gene that encodes the Mus musculus LAMP-1 leader sequence, the Blo t5 gene fragment for the H-2d-restricted Th epitope and the Mus musculus LAMP-1 transmembrane and cytoplasmic domain

<400> 2

atggccgccc ccggcgcccc gagggcccctg ctccctgctgc tgctggcagg ccttgacat	60
ggcgctagcg cagaattgca agagaaaatc attcgagaac ttgatgttgt ttgcgccatg	120
aatatgttga tccccattgc tgtgggcggg gccctggcag ggctggtcct catcgtcctc	180
attgcctacc tcattggcag gaagaggagt cacgccggct atcagaccat ctag	234

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<210> 3  
 <211> 534  
 <212> DNA  
 <213> Artificial

<220>  
 <223> chimeric gene that encodes the Mus musculus LAMP-1 leader sequence, the entire Blo t 5 gene product and the Mus musculus LAMP-1 transmembrane and cytoplasmic domain

<400> 3  
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 ggcgctagcc aagagcacia gccaaagaag gatgatttcc gaaacgaatt cgatcacttg 120  
 ttgatcgaac aggcaaacca tgctatcgaa aaggggagaac atcaattgct ttacttgcaa 180  
 caccaactcg acgaattgaa tgaaaacaag agcaaggaat tgcaagagaa aatcattcga 240  
 gaacttgatg ttgtttgcgc catgatcgaa ggagcccaag gagctttgga acgtgaattg 300  
 aagcgaactg atcttaacat tttggaacga ttcaactacg aagaggctca aactctcagc 360  
 aagatcttgc ttaaggattt gaaggaaacc gaacaaaaag tgaaggatat tcaaacccaa 420  
 aatatgttga tccccattgc tgtgggcggt gccctggcag ggctggtcct catcgtcctc 480  
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<210> 4  
 <211> 420  
 <212> DNA  
 <213> Artificial

<220>  
 <223> chimeric gene that encodes the Mus musculus LAMP-1 leader sequence and the entire Blo t 5 gene product

<400> 4  
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 ttgatcgaac aggcaaacca tgctatcgaa aaggggagaac atcaattgct ttacttgcaa 180  
 caccaactcg acgaattgaa tgaaaacaag agcaaggaat tgcaagagaa aatcattcga 240  
 gaacttgatg ttgtttgcgc catgatcgaa ggagcccaag gagctttgga acgtgaattg 300  
 aagcgaactg atcttaacat tttggaacga ttcaactacg aagaggctca aactctcagc 360  
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<210> 5  
 <211> 849  
 <212> DNA  
 <213> Artificial

<220>  
 <223> chimeric gene that encodes the Mus musculus LAMP-1 leader sequence, the entire Der p 1 gene product and the Mus musculus

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LAMP-1 transmembrane and cytoplasmic domain

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<400> 5
atggccgccc ccggcgcccc gagggcccctg ctctgctgc tgctggcagg ccttgcatat 60
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caaatgcgaa ctgtcactcc cattcgtatg caaggaggct gtggttcatg ttgggctttc 180
tctggtgttg ccgcaactga atcagcttat ttggcttacc gtaatcaatc attggatctt 240
gctgaacaag aattagtcga ttgtgcttcc caacacgggt gtcattggtga taccattcca 300
cgtggtattg aatacatcca acataatggt gtcgtccaag aaagctacta tcgatacggt 360
gcacgagaac aatcatgccg acgaccaaatt gcacaacggt tcggtatctc aaactattgc 420
caaatttacc caccaaattg aaacaaaatt cgtgaagctt tggctcaaac ccacagcgct 480
attgccgtca ttattggcat caaagattta gacgcattcc gtcattatga tggccgaaca 540
atcattcaac gcgataatgg ttaccaacca aactatcacg ctgtcaacat tgttggttac 600
agtaacgcac aagggtgcga ttattggatc gtacgaaaca gttgggatac caattggggt 660
gataatgggt acggttattt tgctgccaac atcgatttga tgatgattga agaatatcca 720
tatgttgtca ttctcaatat gttgatcccc attgctgtgg gcggtgccct ggcagggctg 780
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accatctag 849
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<210> 6
<211> 879
<212> DNA
<213> Artificial
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<220>
<223> chimeric gene that encodes the Homo sapiens tissue plasminogen
activator leader sequence, the entire Der p 1 gene product and
the Mus musculus LAMP-1 transmembrane and cytoplasmic domain
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atcaacggca atgccccgc tgagattgat ctgcgccaga tgaggaccgt gactcccatc 180
cgcatgcaag gcggctgcgg gtcttggttg gccttctcag gcgtggccgc gaccgagtct 240
gcatacctcg cgtatcgga tcagagcctg gacctcgctg agcaggagct cggtgactgc 300
gcctccaac acggatgtca tggggatacg attcccagag gtatcgaata catccagcat 360
aatggcgctc tgcaggaaag ctattaccga tacgtagcta gggagcagtc ctgccgccgt 420
cctaacgccc agcgcttcgg catttccaac tattgccaga tctaccccc taatgtgaac 480
aagatcaggg aggccctggc gcagacgcac agcgccatcg ctgtcatcat cggaatcaag 540
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gatctggacg cattccggca ctatgacggg cgcacaatca tccagcgcga caacggatac 600  
cagccaaact atcacgcggt caacatcgtg gggtactcga acgcccaggg ggtggactac 660  
tggatcgtgc ggaacagttg ggacaccaac tggggcgaca acggctacgg ctactttgcc 720  
gccaacatcg acctgatgat gatcgaagag taccggtacg tggatgacct gttgatcccc 780  
attgctgtgg gcggtgccct ggcagggctg gtcctcatcg tcctcattgc ctacctcatt 840  
ggcaggaaga ggagtcacgc cggctatcag accatctag 879

<210> 7  
<211> 26  
<212> PRT  
<213> Rattus norvegicus LIMP II Leader peptide

<400> 7

Met Ala Arg Cys Cys Phe Tyr Thr Ala Gly Thr Leu Ser Leu Leu Leu  
1 5 10 15

Leu Val Thr Ser Val Thr Leu Leu Val Ala  
20 25

<210> 8  
<211> 46  
<212> PRT  
<213> Rattus norvegicus LIMP II Transmembrane cytoplasmic  
domain

<400> 8

Leu Ile Val Thr Asn Ile Pro Tyr Ile Ile Met Ala Leu Gly Val Phe  
1 5 10 15

Phe Gly Leu Ile Phe Thr Trp Leu Ala Cys Arg Gly Gln Gly Ser Thr  
20 25 30

Asp Glu Gly Thr Ala Asp Glu Arg Ala Pro Leu Ile Arg Thr  
35 40 45

<210> 9  
<211> 26  
<212> PRT  
<213> Homo sapiens LIMP II Leader peptide

<400> 9

Met Gly Arg Cys Cys Phe Tyr Thr Ala Gly Thr Leu Ser Leu Leu Leu  
1 5 10 15

Leu Val Thr Ser Val Thr Leu Leu Val Ala  
20 25

11747.105002 NUS - Sequence Listing.ST25.txt

<210> 10

<211> 46

<212> PRT

<213> Homo sapiens LIMP II Transmembrane cytoplasmic domain

<400> 10

Leu Ile Ile Thr Asn Ile Pro Tyr Ile Ile Met Ala Leu Gly Val Phe  
1 5 10 15

Phe Gly Leu Val Phe Thr Trp Leu Ala Cys Lys Gly Gln Gly Ser Met  
20 25 30

Asp Glu Gly Thr Ala Asp Glu Arg Ala Pro Leu Ile Arg Thr  
35 40 45

<210> 11

<211> 26

<212> PRT

<213> Mus musculus LIMP II Leader peptide

<400> 11

Met Gly Arg Cys Cys Phe Tyr Thr Ala Gly Thr Leu Ser Leu Leu Leu  
1 5 10 15

Leu Val Thr Ser Val Thr Leu Leu Val Ala  
20 25

<210> 12

<211> 46

<212> PRT

<213> Mus musculus LIMP II Transmembrane cytoplasmic domain

<400> 12

Leu Val Val Thr Asn Ile Pro Tyr Ile Ile Met Ala Leu Gly Val Phe  
1 5 10 15

Phe Gly Leu Val Phe Thr Trp Leu Ala Cys Arg Gly Gln Gly Ser Met  
20 25 30

Asp Glu Gly Thr Ala Asp Glu Arg Ala Pro Leu Ile Arg Thr  
35 40 45

<210> 13

<211> 27

<212> PRT

<213> Homo sapiens DEC-205 Leader peptide

<400> 13

Met Arg Thr Gly Trp Ala Thr Pro Arg Arg Pro Ala Gly Leu Leu Met  
1 5 10 15

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Leu Leu Phe Trp Phe Phe Asp Leu Ala Glu Pro  
20 25

<210> 14  
<211> 56  
<212> PRT  
<213> Homo sapiens DEC-205 Transmembrane cytoplasmic domain  
<400> 14

Tyr Thr Ala Ile Ala Ile Ile Val Ala Thr Leu Ser Ile Leu Val Leu  
1 5 10 15

Met Gly Gly Leu Ile Trp Phe Leu Phe Gln Arg His Arg Leu His Leu  
20 25 30

Ala Gly Phe Ser Ser Val Arg Tyr Ala Gln Gly Val Asn Glu Asp Glu  
35 40 45

Ile Met Leu Pro Ser Phe His Asp  
50 55

<210> 15  
<211> 27  
<212> PRT  
<213> Mus musculus DEC-205 Leader peptide  
<400> 15

Met Arg Thr Gly Arg Val Thr Pro Gly Leu Ala Ala Gly Leu Leu Leu  
1 5 10 15

Leu Leu Leu Arg Ser Phe Gly Leu Val Glu Pro  
20 25

<210> 16  
<211> 56  
<212> PRT  
<213> Mus musculus DEC-205 Transmembrane cytoplasmic domain  
<400> 16

Tyr Thr Gly Ile Ala Ile Leu Phe Ala Val Leu Cys Leu Leu Gly Leu  
1 5 10 15

Ile Ser Leu Ala Ile Trp Phe Leu Leu Gln Arg Ser His Ile Arg Trp  
20 25 30

Thr Gly Phe Ser Ser Val Arg Tyr Glu His Gly Thr Asn Glu Asp Glu  
35 40 45

Val Met Leu Pro Ser Phe His Asp

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<210> 17  
<211> 41  
<212> PRT  
<213> Homo sapiens P-selectin Leader peptide

<400> 17

Met Ala Asn Cys Gln Ile Ala Ile Leu Tyr Gln Arg Phe Gln Arg Val  
1 5 10 15

Val Phe Gly Ile Ser Gln Leu Leu Cys Phe Ser Ala Leu Ile Ser Glu  
20 25 30

Leu Thr Asn Gln Lys Glu Val Ala Ala  
35 40

<210> 18  
<211> 59  
<212> PRT  
<213> Homo sapiens P-selectin Transmembrane cytoplasmic domain

<400> 18

Leu Thr Tyr Phe Gly Gly Ala Val Ala Ser Thr Ile Gly Leu Ile Met  
1 5 10 15

Gly Gly Thr Leu Leu Ala Leu Leu Arg Lys Arg Phe Arg Gln Lys Asp  
20 25 30

Asp Gly Lys Cys Pro Leu Asn Pro His Ser His Leu Gly Thr Tyr Gly  
35 40 45

Val Phe Thr Asn Ala Ala Phe Asp Pro Ser Pro  
50 55

<210> 19  
<211> 17  
<212> PRT  
<213> Homo sapiens tyrosinase Leader peptide

<400> 19

Met Leu Leu Ala Val Leu Tyr Cys Leu Leu Trp Ser Phe Gln Thr Ser  
1 5 10 15

Ala

<210> 20  
<211> 30  
<212> PRT

<213> Homo sapiens tyrosinase Transmembrane cytoplasmic domain

<400> 20

Cys Arg His Lys Arg Lys Gln Leu Pro Glu Glu Lys Gln Pro Leu Leu  
1 5 10 15

Met Glu Lys Glu Asp Tyr His Ser Leu Tyr Gln Ser His Leu  
20 25 30

<210> 21

<211> 24

<212> PRT

<213> Homo sapiens GLUT4 Leader peptide

<400> 21

Met Pro Ser Gly Phe Gln Gln Ile Gly Ser Glu Asp Gly Glu Pro Pro  
1 5 10 15

Gln Gln Arg Val Thr Gly Thr Leu  
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<210> 22

<211> 43

<212> PRT

<213> Homo sapiens GLUT4 Transmembrane Cytoplasmic domain

<400> 22

Arg Val Pro Glu Thr Arg Gly Arg Thr Phe Asp Gln Ile Ser Ala Ala  
1 5 10 15

Phe His Arg Thr Pro Ser Leu Leu Glu Gln Glu Val Lys Pro Ser Thr  
20 25 30

Glu Leu Glu Tyr Leu Gly Pro Asp Glu Asn Asp  
35 40

<210> 23

<211> 21

<212> PRT

<213> Rattus norvegicus endotubin Leader peptide

<400> 23

Met Cys Leu Pro Ser Cys Leu Leu Ser Ile Trp Val Leu Phe Met Ala  
1 5 10 15

Ala Gln Ser Leu Gly  
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<210> 24

<211> 66



11747.105002 NUS - Sequence Listing.ST25.txt

<212> PRT

<213> Rattus norvegicus endotubin Transmembrane Cytoplasmic domain

<400> 24

Ala Ala Pro Val Ser Val Pro Val Ala Val Gly Gly Ala Leu Leu Leu  
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Phe Leu Leu Leu Leu Gly Leu Gly Gly Trp His Trp Leu Gln Lys Gln  
20 25 30

His Leu Pro Cys Gln Ser Thr Asp Ala Ala Ala Ser Gly Phe Asp Asn  
35 40 45

Ile Leu Phe Asn Ala Asp Gln Val Thr Leu Pro Glu Ser Ile Thr Ser  
50 55 60

Asn Pro  
65

<210> 25

<211> 23

<212> PRT

<213> Mus musculus LAMP-1 leader peptide

<400> 25

Met Ala Ala Pro Gly Ala Arg Arg Pro Leu Leu Leu Leu Leu Leu Ala  
1 5 10 15

Gly Leu Ala His Gly Ala Ser  
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<210> 26

<211> 36

<212> PRT

<213> Mus musculus LAMP-1 transmembrane and cytoplasmic domain

<400> 26

Met Leu Ile Pro Ile Ala Val Gly Gly Ala Leu Ala Gly Leu Val Leu  
1 5 10 15

Ile Val Leu Ile Ala Tyr Leu Ile Gly Arg Lys Arg Ser His Ala Gly  
20 25 30

Tyr Glu Thr Ile  
35

<210> 27

<211> 78

<212> DNA

<213> Rattus norvegicus nucleotide sequence encoding the LIMP II leader peptide

<400> 27  
atggcccgat gctgcttcta cacggcgggg acactgtctc tgctgctgct ggtgaccagt 60  
gtcacgctgc tagtggtc 78

<210> 28

<211> 141

<212> DNA

<213> Rattus norvegicus nucleotide sequence encoding the LIMP II Transmembrane cytoplasmic domain

<400> 28  
ttgattgtca ccaacatacc ctacatcatc atggcactgg gcgtgttctt tggcttgatt 60  
ttcacgtggc tggcgtgtcg aggacagggg tctacggatg agggaactgc agatgaaagg 120  
gcacccctca tacggaccta a 141

<210> 29

<211> 78

<212> DNA

<213> Homo sapiens nucleotide sequence encoding the LIMP II Leader peptide

<400> 29  
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gtcacgctgc tggtaggcc 78

<210> 30

<211> 141

<212> DNA

<213> Homo sapiens nucleotide sequence encoding the LIMP II Transmembrane cytoplasmic domain

<400> 30  
ttgatcatca ccaacatacc ctacatcatc atggcgctgg gtgtgttctt tggtttggtt 60  
tttacctggc ttgcatgcaa aggacagggg tccatggatg agggaacagc ggatgaaaga 120  
gcacccctca ttcgaaaccta a 141

<210> 31

<211> 78

<212> DNA

<213> Mus musculus nucleotide sequence encoding the LIMP II Leader peptide

<400> 31  
atgggcagat gctgcttcta cacggcgggg acgctgtctc tgctgctgct ggtgaccagc 60  
gtcacgctgc tagtggtc 78

<210> 32

<211> 141

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<212> DNA
<213> Mus musculus nucleotide sequence encoding the LIMP II
        Transmembrane cytoplasmic domain

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ttcacgtggc tggcgtgtcg aggacagggg tctatggatg agggaaactgc agatgaaaga      120
gcacccctca tacgaaccta a                                          141

<210> 33
<211> 81
<212> DNA
<213> Homo sapiens nucleotide sequence encoding the DEC-205 Leader
        peptide

<400> 33
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ttcttcgatc tcgcgagacc c                                          81

<210> 34
<211> 171
<212> DNA
<213> Homo sapiens nucleotide sequence encoding the DEC-205
        Transmembrane cytoplasmic domain

<400> 34
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atttggttcc tcttccaaag gcaccgtttg cacctggcgg gtttctcatc agttcgatat      120
gcacaaggag tgaatgaaga tgagattatg cttccttctt tccatgacta a          171

<210> 35
<211> 81
<212> DNA
<213> Mus musculus nucleotide sequence encoding the DEC-205 leader
        peptide

<400> 35
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tccttcgggc ttgtggagcc t                                          81

<210> 36
<211> 171
<212> DNA
<213> Mouse nucleotide sequence encoding the DEC-205 Transmembrane
        cytoplasmic domain

<400> 36
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atttggttcc tcttgcaacg atcccatatc cgctggaccg gcttctcctc gggtcggtat      120
gaacatggaa ccaacgaaga cgaggtgatg ctcccttctt tccacgacta a          171

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<210> 37  
 <211> 123  
 <212> DNA  
 <213> Homo sapiens nucleotide sequence encoding the P-selectin Leader peptide

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 gca 123

<210> 38  
 <211> 180  
 <212> DNA  
 <213> Homo sapiens nucleotide sequence encoding the P-selectin Transmembrane cytoplasmic domain

<400> 38  
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 ctggctttgc taagaaagcg tttcagacaa aaagatgatg ggaaatgccc cttgaatcct 120  
 cacagccacc taggaacata tggagttttt acaaacgctg catttgaccc gagtccttaa 180

<210> 39  
 <211> 51  
 <212> DNA  
 <213> Homo sapiens nucleotide sequence encoding the tyrosinase Leader peptide

<400> 39  
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<210> 40  
 <211> 93  
 <212> DNA  
 <213> Homo sapiens nucleotide sequence encoding the tyrosinase Transmembrane cytoplasmic domain

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<210> 41  
 <211> 72  
 <212> DNA  
 <213> Homo sapiens nucleotide sequence encoding the GLUT4 Leader peptide

<400> 41  
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 actgggaccc tg 72

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<210> 42  
 <211> 129  
 <212> DNA  
 <213> Homo sapiens nucleotide sequence encoding the GLUT4 Transmembrane  
 Cytoplasmic domain

<400> 42  
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 aacgactga 129

<210> 43  
 <211> 63  
 <212> DNA  
 <213> Rattus norvegicus nucleotide sequence encoding the endotubin  
 Leader peptide

<400> 43  
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 ggc 63

<210> 44  
 <211> 201  
 <212> DNA  
 <213> Rattus norvegicus nucleotide sequence encoding the endotubin  
 Transmembrane cytoplasmic domain

<400> 44  
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 ctgggccttg gaggttggca ctggctgcag aagcagcacc tcccctgcca agtacagat 120  
 gcagcagcct ctggctttga caatatcctc ttcaatgcgg atcaagttac cctcccagaa 180  
 tcaatcacca gtaaccata g 201

<210> 45  
 <211> 69  
 <212> DNA  
 <213> Mus musculus nucleotide sequence encoding the LAMP-1 leader  
 sequence

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 ggcgctagc 69

<210> 46  
 <211> 108  
 <212> DNA  
 <213> Mus musculus nucleotide sequence encoding the LAMP-1  
 transmembrane cytoplasmic domain

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gcctacctca ttggcaggaa gaggagtcac gccggctatc agaccatc 108

<210> 47  
 <211> 105  
 <212> DNA  
 <213> Homo sapiens nucleotide sequence encoding the tissue plasminogen activator leader sequence

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<210> 48  
 <211> 35  
 <212> PRT  
 <213> Homo sapiens tissue plasminogen activator leader peptide  
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 1 5 10 15

Ala Val Phe Val Ser Pro Ser Gln Val Gly Val Gln Asp Pro Cys Val  
 20 25 30

Pro Pro Leu  
 35

<210> 49  
 <211> 17  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> Blo t 5 H-2d-restricted T cell epitope peptide  
 <400> 49

Ala Glu Leu Gln Glu Lys Ile Ile Arg Glu Leu Asp Val Val Cys Ala  
 1 5 10 15

Met

<210> 50  
 <211> 117  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> Blo t 5 peptide  
 <400> 50

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 Page 14

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                   20                    25                    30  
 Leu Leu Tyr Leu Gln His Gln Leu Asp Glu Leu Asn Glu Asn Lys Ser  
                   35                    40                    45  
 Lys Glu Leu Gln Glu Lys Ile Ile Arg Glu Leu Asp Val Val Cys Ala  
                   50                    55                    60  
 Met Ile Glu Gly Ala Gln Gly Ala Leu Glu Arg Glu Leu Lys Arg Thr  
                   65                    70                    75                    80  
 Asp Leu Asn Ile Leu Glu Arg Phe Asn Tyr Glu Glu Ala Gln Thr Leu  
                   85                    90                    95  
 Ser Lys Ile Leu Leu Lys Asp Leu Lys Glu Thr Glu Gln Lys Val Lys  
                   100                    105                    110  
 Asp Ile Gln Thr Gln  
                   115

<210> 51  
 <211> 222  
 <212> PRT  
 <213> Artificial sequence

<220>  
 <223> Der p 1 peptide

<400> 51

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 1                    5                    10                    15  
 Arg Gln Met Arg Thr Val Thr Pro Ile Arg Met Gln Gly Gly Cys Gly  
                   20                    25                    30  
 Ser Cys Trp Ala Phe Ser Gly Val Ala Ala Thr Glu Ser Ala Tyr Leu  
                   35                    40                    45  
 Ala Tyr Arg Asn Gln Ser Leu Asp Leu Ala Glu Gln Glu Leu Val Asp  
                   50                    55                    60  
 Cys Ala Ser Gln His Gly Cys His Gly Asp Thr Ile Pro Arg Gly Ile  
                   65                    70                    75                    80  
 Glu Tyr Ile Gln His Asn Gly Val Val Gln Glu Ser Tyr Tyr Arg Tyr  
                   85                    90                    95

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Val Ala Arg Glu Gln Ser Cys Arg Arg Pro Asn Ala Gln Arg Phe Gly  
100 105 110

Ile Ser Asn Tyr Cys Gln Ile Tyr Pro Pro Asn Val Asn Lys Ile Arg  
115 120 125

Glu Ala Leu Ala Gln Thr His Ser Ala Ile Ala Val Ile Ile Gly Ile  
130 135 140

Lys Asp Leu Asp Ala Phe Arg His Tyr Asp Gly Arg Thr Ile Ile Gln  
145 150 155 160

Arg Asp Asn Gly Tyr Gln Pro Asn Tyr His Ala Val Asn Ile Val Gly  
165 170 175

Tyr Ser Asn Ala Gln Gly Val Asp Tyr Trp Ile Val Arg Asn Ser Trp  
180 185 190

Asp Thr Asn Trp Gly Asp Asn Gly Tyr Gly Tyr Phe Ala Ala Asn Ile  
195 200 205

Asp Leu Met Met Ile Glu Glu Tyr Pro Tyr Val Val Ile Leu  
210 215 220

<210> 52

<211> 37

<212> PRT

<213> Mus musculus LAMP-1 transmembrane & cytoplasmic domain

<400> 52

Asn Met Leu Ile Pro Ile Ala Val Gly Gly Ala Leu Ala Gly Leu Val  
1 5 10 15

Leu Ile Val Leu Ile Ala Tyr Leu Ile Gly Arg Lys Arg Ser His Ala  
20 25 30

Gly Tyr Glu Thr Ile  
35